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Agricultural Engineering.

Agricultural engineering and its public. By C.O. Reed. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 341-345.

Institute of Agricultural Engineering opened in England. Ford News. v. 17, no. 3. August, 1937. p. 3. Henry Ford Institute of Agricultural Engineering, Boreham, near Chelmsford, England, was inaugurated July 1. Primarily inaugurated to meet remarkable spread of mechanization in British farming. It has been created to meet need for new knowledge farming. It has been created to meet need for new knowledge and skill on part of farm workers. It is intended that institute will be self-supporting. Courses at institute have been formed for farmers, their sons and farm workers generally. In addition special courses will be available to tractor dealers' mechanics and tractor salesmen, while other courses will be arranged for farmers who cannot attend normal courses. Consideration will be given to design and construction of modern tractors and implements. Instruction will be given in their use and maintenance and also in execution of running repairs. Use of some of the newer farm machines, such as the combined harvester and the grass and grain driers also will be dealt with, and instruction will be given in forge work, the use of tools, etc.

New horizons for agricultural engineers. By Dr. C.W. Warburton. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 346-348.

Agriculture.

Agricultural marketing programs: provisions of the agricultural marketing agreement act of 1937. Washington, U.S. Govt. print. off., 1937. 10 p. U.S. Department of Agriculture. Agricultural adjustment administration. Marketing information series.

Farmer, the farm equipment manufacturer, the American standard of living. Northwest Farm Equipment Journal. v. 51, no. 8. August, 1937. p. 41-42.

Importance of agriculture to the life of the nation. By Chris L. Christensen. Northwest Farm Equipment Journal. v. 51, no. 8. August, 1937. p. 31-32.

Making farming an art. By Erland Nelson. Northwest Farm Equipment Journal. v. 51, no. 6. June, 1937. p. 31-33. Article departs somewhat from narrow field of farm mechanics. But there is intimate relationship, nevertheless; college-trained farmer envisioned by President Nelson will certainly make largest possible use of mechanical appliances. Discusses pioneer work being done by Dana College to raise standard of farm living.

Agriculture. (Cont'd)

Progressive agriculture. Forty-seventh annual report for the year ending June 30, 1936. Tucson, Arizona, 1937. 94 p. University of Arizona. College of Agriculture. Agricultural experiment station. Agricultural Engineering, p. 19-29.

Air Conditioning.

Dehumidification - How much is needed for cooling. Domestic Engineering. v. 150, no. 1. July, 1937. p. 68-70, 172-173. Air conditioning is simultaneous control of temperature, humidity, circulation, distribution and cleanliness of air. Of these functions, dehumidification stands out as being of vital importance. Shows how to figure it for actual job.

Drying air without cooling it. By G. Ferguson. Refrigerating Engineering. v. 34, no. 2. August, 1937. p. 87-88.

Healthy comfort. By James Govan. Ontario hydro-electric power commission. Bulletin. v. 24, no. 7. July, 1937. p. 218-230.

How much power will an air conditioning system use? By Anson D. Marston. Heating, Piping and Air Conditioning. v. 9, no. 8. August, 1937. p. 513-519.

Practical duct design and fan selection for air conditioning. By H.M. Hendrickson. Refrigerating Engineering. v. 34, no. 2. August, 1937. p. 97-99.

Practical duct design and fan selection for air conditioning. By H.M. Hendrickson. Refrigerating Engineering. v. 34, no. 3. September, 1937. p. 163-166, 186. Part II.

Practical standards for air conditioning calculations; latent and total heat. By W.S. Bodinus. Heating, Piping and Air-Conditioning. v. 9, no. 8. August, 1937. p. 488-491.

Refrigeration piping design. By R.C. Doremus. Heating, Piping, and Air Conditioning. v. 9, no. 8. August, 1937. p. 492-495. Presents basic data on design and installation of piping for industrial and commercial refrigeration work and air conditioning. Special attention given to newer refrigerants.

Alcohol Fuel.

Japan's home program based on alky gas, coal liquefaction. National Petroleum News. v. 29, no. 33. August 18, 1937. p. 51. Coal liquefaction and production of absolute alcohol to be mixed with gasoline are two principal features of elaborate seven-year program aimed at Japanese self-sufficiency with respect to liquid fuels. It is understood coal liquefaction phase of program calls for attainment of annual production of 2,170,000 kilolitres (13,670,000 barrels) of synthetic

Alcohol Fuel. (Cont'd)

fuels within next seven years. Semi-official production company to be known as Imperial Fuel Industry Co., Ltd., is proposed, with joint capital participation by government and private interests. In addition, there are number of independent production projects under consideration or in process of construction. As for "alky-gas" phase of program, new law is scheduled to become effective in Japan October 1, providing for compulsory mixing of gasoline and alcohol. Another law which became effective April 1, gives government control of production of alcohol by license system, monopolizes sales, and allows government to engage directly in production.

Barns.

Sheep husbandry in Canada. 8th edition. Ottawa, Can., 1937. Dominion of Canada. Department of Agriculture. Publication 561. Farmers' bulletin 30, revision. 112 p. Sheep barns, p. 78-91.

Chemurgy.

Chemurgy comes South. By J.E. Stanford. Southern Agriculturist. v. 67, no. 6. June, 1937. p. 18. Chemurgy defined as self-help program with its objectives (1). Advancing industrial use of American farm products. (2) Encouraging production in this country of crops now imported. (3). Preserving American farmer.

Concrete.

How to estimate and mix concrete. Ohio Farmer. v. 179, no. 13. June 19, 1937. p. 434. Data furnished by Portland Cement Association.

Corrosion.

Initial corrosion rate of mild steel. By C.W. Borgmann. Industrial & Engineering Chemistry. Industrial edition. v. 29, no. 7. July, 1937. p.814-821. Study has been made of specific influence of cation on initial corrosion of mild steel in aqueous solutions. In many solutions corrosion rate is controlled by cathodic reaction. It has been shown experimentally that in such solutions cation markedly influences corrosion process. If anion in neutral solutions is nonoxidizing and nonreducing and forms soluble primary products with metal, corrosion rate depends on nature of cation. Cation was also found to exert considerable influence on rate of corrosion in salts which hydrolyze to give acidic reactions. Influence of additions of one salt to another, maintaining anion concentration constant, was studied for solutions of potassium chloride, calcium chloride, and ammonium chloride. Few tests indicated that initial corrosion by zinc is also influenced by nature of cation present.

Laboratory corrosion tests of welded low-carbon stainless steel. By George A. Ellinger and Leon C. Bibber. Washington, U.S. Govt. print. off., 1937. 69-82 p. U.S. Department of Commerce. National Bureau

Corrosion. (Cont'd)

of Standards. Research paper RP963. Welded specimens of low-carbon stainless steel (less than 0.06 percent of carbon) were exposed to corrosion attack of three different solutions. Results of these tests were as follows: In copper sulphate-sulphuric acid solution, intergranular corrosion did not occur in either plate or weld metal regardless of heat treatment. In boiling nitric acid, intergranular corrosion occurred only in certain heat-treated plates of low-carbon stainless steel. Intergranular corrosion did not occur in welded metal, with or without heat treatment. In hydrochloric acid of high concentration, corrosion rate of plate metal was not affected by heat treatment, but corrosion rate of weld metal was considerably decreased by heat treatment at high temperatures. Intergranular corrosion was not observed in any specimen exposed to this reagent. These results can be explained on basis of selective attack by corrosive agents on certain constituents of steel samples.

Protection of orchard heater pipe lines against corrosion. By Gordon N. Scott. California Citrograph. v. 22, no. 8. June, 1937. p. 354, 357.

Cotton and Cotton Ginning.

Cotton variety tests of 1934 and 1935. By L.M. Humphrey. Fayetteville, Ark., 1937. 32 p. University of Arkansas. College of Agriculture. Agricultural experiment station. Bulletin no. 344.

Cotton Machinery.

Mechanical cotton pickers. International Cotton Bulletin. v. 15, no. 60. July, 1937. p. 566, 568. Three mechanical cotton pickers at about same stage of development. Each is based on a rotating spindle theory: Rust picker working on plan of smooth but dampened spindle, the International Harvester Co., picker and Berry picker having barbed spindles which, rotating, pull cotton from boll. Each of machines, however, has same fundamental defect, International and Berry pickers to even greater degree than Rust, for while they all pick cotton and pick it quickly they also pick it "trashy."

Shirley patent cotton lint recoverer. International cotton bulletin. v. 15, no. 60. July, 1937. p. 557-559.

Dams.

Construction of Pine View Dam, Ogden River project. By G.C. Imrie. Reclamation Era. v. 27, no. 8. August, 1937. p. 181-183.

Construction of Rye Patch Dam. By L.J. Foster. Reclamation Era. v. 27, no. 7. July, 1937. p. 152-155.

Drop inlet soil saving dams. By E.R. Jones. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 349-351. Requirements are:

Dams. (Cont'd)

1. Water-tight dam. 2. Spillway of ample capacity. 3. Apron below spillway to bear impact of falling water. 4. Material that is everlasting. 5. Intercepting dike to divert runoff and channel to deliver it to spillway. 6. Safe gradient below the apron. 7. Public or private benefit exceeding cost of construction.

Diesel Engines.

Light Diesels featured at National Tractor meeting. S.A.E. Journal. v. 40, no. 6. June, 1937. p. 36-37.

Drainage.

Much irrigated land needs drainage. Utah Farmer. v. 58, no. 2. August 15, 1937. p.2.

Electric Service, Rural

Step regulators avert large rural outlay. By G.H. Landis and H.A. McLaughlin. Electrical World. v. 108, no. 7. August 14, 1937. p. 525-526, 596. At one-third the cost of alternatives region is competently served, readjustments are easy and salvage is high.

Electric Wiring.

Electric wiring for the farm. Ohio Farmer. v. 179, no. 13. June 19, 1937. p. 431-432.

Electric wiring for the farm home; 1937 record year for "high line" service to Ohio farms. Ohio Farmer. v. 179, no. 13. June 19, 1937. p. 423, 445.

Functional aspects of wiring in building design. By Charles G. Beersman. Electrical World. v. 108, no. 5. July 31, 1937. p. 346, 430. Permanent or built-in wiring must provide for raceway adequacy - Application or outlet wiring must be accessible and adaptable to changes in use and occupancy.

Wiring farm homes. Farm & Ranch. v. 56, no. 11. June 1, 1937. p. 25.

Wiring the farmstead. By I.P. Blauser. Ohio Farmer. v. 179, no. 6. March 13, 1937. p. 198, 201.

Wise and otherwise electric wiring. By R.U. Blasingame. Pennsylvania Farmer. v. 117, no. 4. August 14, 1937. p. 5.

Electricity on the Farm.

Electricity - The Modern farm servant. Montana Farmer. v. 24, no. 20. June 15, 1937. p. 7.

Electricity on the Farm. (Cont'd).

Electrification is forging ahead in Wisconsin. Wisconsin Agriculturist and Farmer. v. 64, no. 8. April 10, 1937. p. 3, 9.

Electrified dairy. By J.A. Newlander. New England Homestead. v. 110, no. 3. June 19, 1937. p. 6, 12.

Farm business costs. By G.L. Munroe. New England Homestead. v. 110, no. 3. June 19, 1937. p. 13, 16-17. Electricity lowers operating expenses and leaves a larger profit balance.

Our servant - Electricity. Utah Farmer. v. 57, no. 22. June 25, 1937. p. 4, 22.

Vermont marches on. By H.N. Stapleton. New England Homestead. v. 110, no. 3. June 19, 1937. p. 9, 28. Use of electric power per farm has shown an increase each year.

What is the cost of operating electric equipment on the farm? New England Homestead. v. 110, no. 15. July 17, 1937. p. 11. Multiply your electric rate by kilowatt-hours indicated, and you have average cost of operation. All consumption figures are average and may be slightly higher or lower, depending on operating conditions. Table furnished through courtesy of General Electric Company, Schenectady, N.Y.

Erosion Control.

Beach erosion studies to be made in wave tank. Engineering News-Record. v. 119, no. 8. August 19, 1937. p. 306. Continued study by Beach Erosion Board of many problems caused by beach erosion will utilize new and larger web tank. New 27,000 gal. wave tank, now under construction at Dalecarlia Filtration Reservation in District of Columbia, is to be 85 ft. long, 12 ft. wide, and 4 ft. deep and will have built into it many new features that will make it most flexible wave tank in this country. In beach erosion test in new tank, miniature waves, created by wave-making machine located at one end of tank, will strike model beach at opposite end. Specially designed water inlets and outlets along both sides of new tank will permit creation of littoral currents at almost any desired angle, while new automatically-operated gate located at same end of tank as wave-making machine will produce desired tide. Six windows at 10 ft. intervals along one side of tank are to be used for observing and photographing various actions taking place inside tank from below water surface. Traveling platform, operating on rails set into top of tank's side walls, will permit observations and photography from above. "Profilometer," developed by board, is expected to receive its first use in new tank. Meter, when attached to traveling platform, will record bottom profile.

Slowing the raindrops in Java and Sumatra. By Guy R. Stewart. Soil Conservation. v. 3, no. 1. July, 1937. p. 22-25.

Erosion Control. (Cont'd)

Stabilization of roadside banks. By F.R. Dreibelbis and Helmut Kohnke. Soil Conservation. v. 3, no. 2. August, 1937. p. 38-41.

Stream improvement as related to erosion. By Robert Ritzler. Washington, D.C., Senate Committee Print. 74th Congress, 2d session, 1936 (p. 464-466). Reprint from Proceedings, North American Wildlife Conference, Feb. 3-7, 1936.

Farm Buildings.

Plans of farm buildings for northeastern states. Compiled by Bureau of Agricultural Engineering and Extension Service in cooperation with northeastern colleges and universities. Washington, D.C., 1937. 128 p. U.S. Department of Agriculture. Miscellaneous publication no. 278.

Farm Houses.

Model farm houses are being studied. Louisiana Farm Bureau News. v. 14, no. 5. May 15, 1937. p. 5. Employment of non-relief skilled labor and use of simplified, standardized housing plans will now make it possible for Resettlement Administration to build houses on its uncomplemented rural projects at greatly reduced cost.

Montana farm homes go modern. By Claude Briggs. Montana Farmer. v. 24, no. 20. June 15, 1937. p. 3, 31. Good planning and sound construction are basic essentials.

New concrete home built on this farm without contractor. Wisconsin Agriculturist and Farmer. v. 64, no. 15. July 17, 1937. p. 3, 5.

Rural homes call for special requirements. Utah Farmer. v. 57, no. 22. June 25, 1937. p. 3, 7.

Farm Labor.

Farm labor in the Yakima valley, Washington. Rural Sociology series in Farm labor, no. 1. By Paul H. Landis and Melvin S. Brooks. Pullman, Washington, 1936. 75 p. State College of Washington. Agricultural experiment station. Bulletin no. 343.

Farm Layouts.

Airplanes adopted to ascertain acreage. By Milton Mangum. Utah Farmer. v. 7, no. 21. June 10, 1937. p. 9.

Shooting farm layout. By W.F. Schuyler. Farm Journal. v. 61, no.8. August, 1937. p. 16. Aerial picture map is used by many farmers in place of sketch of farm layout drawn to scale. Such layout map is excellent aid in planning farm rotations and in rearranging fields for better farm management methods.

Farm Machinery and Equipment.

Andrus memorial dedicated. Northwest Farm Equipment Journal. v. 51, no. 8. August, 1937. p. 30.

Cost for combining. By I.W. Dickerson. Farmer-Stockman. June 15, 1937. p. 12. Table gives estimated fair charge an acre for different acreages for three sizes of combines.

Device to build contour ridges on hillside pastures. Farm Implement News. v. 58, no. 17. August 26, 1937. p. 18. Simple machine for building contour ridges on hillside pastures without destroying any sod - and at same time leaving very little unsodded earth exposed - has been devised by Soil Conservation Service engineers in cooperation with engineers of Iowa State College.

Efficient tools cut harvesting costs. Utah Farmer. v. 7, no. 21. June 10, 1937. p. 10.

Efficient tools cut harvesting costs. Northwest Farm Equipment. v. 51, no. 6. June, 1937. p. 42.

Equipment needed for fall season. By Research Department Farm Equipment Institute. Farm Implement News. v. 58, no. 14. July 15, 1937. p. 26-27. Discussion of machines which reduce farmers' costs and increase their profits.

Farm machinery of the good old days. By Dorothy V. Smith. New Jersey Farm and Garden. v. 8, no. 2. February, 1937. p. 9, 20.

Flax seed plot thresher. By Roy Bainer and J.S. Winters. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 363-364.

Growers' equipment. Better tools are making commercial vegetable growing more profitable. By Paul W. Dempsey. New England Homestead. v. 110, no. 6. March 13, 1937. p. 18-19.

How to pick long-life galvanized goods. By K.J.T. Ekblaw. Farm Machinery and Equipment. no. 1843. July 15, 1937. p. 12, 16. Galvanized supplies, selected with the care that farmers use in buying stock and feed, can save them many dollars and much trouble.

Implement efficiency. By C.F. Brown. Hoosier Farmer. v. 22, no. 7. July, 1937. p. 9, 30-31.

...M-M announces the model Z. Implement and Tractor. v. 52, no. 15. July 24, 1937. p. 18-20, 22.

Near-record year forecast for farm equipment companies. Implement & Tractor. v. 52, no. 15. July 24, 1937. p. 15. Estimated 1937 farm income of $9,500,000,000 coupled with trend toward mechanization

Farm Machinery & Equipment. (Cont'd).

of American agriculture, point to largest sales and profits for farm equipment industry since 1929, according to special survey of agricultural machinery industry issued by Fenner & Beane, N.Y. Stock Exchange firm. Farm equipment sales this year may reach $566,000,000 up 27 percent over 1936, and almost equal to sales of $571,000,000 in 1929. Of this the Fenner & Beane study estimates that $500,000,000 may represent domestic sales, while $660,000,000 may come from export market.

New combines harvest many crops. Northwest Farm Equipment Journal. v. 51, no. 6. June, 1937. p. 38, 40.

1937 haying tools. New England Homestead. v. 110, no. 10. May 8, 1937. p. 4, 17.

Presenting 1937 improvements in farm machinery. Ohio Farmer. v. 179, no. 6. March 13, 1937. p. 175, 202-206.

Farm Motors.

Electric motors for farm power. By I.P. Blauser. Electrical Ruralist. v. 1, no. 4. August, 1937. p. 4-5, 11.

Short-order electricity. Successful Farming. v. 35, no. 9. September, 1937. p. 32, 34. Discussion of small gasoline motors.

Farm Power.

Horse and tractor costs compared. By Wm. P. Kintzley. Tractor Farming. v. 22, nos. 7 and 8. July-August, 1937. p. 13.

Feed Grinders and Grinding.

Cutting feed costs with electric power. By Frank Hamlin. New England Homestead. v. 110, no. 3. June 19, 1937. p. 6, 12.

Fencing.

History of the manufacture of barbed wire fencing. By Arthur G. Warren. Abstract from the files of the Industrial museum American Steel and Wire company, Worcester, Mass., 1924. 102 p. typewritten.

Wire; the forerunner of agricultural development. By J.E. Stanford. Southern Agriculturist. v. 67, no. 5. May, 1937. p. 5.

Fertilizer Placement.

Fertilizer placement studies in potatoes - Maine - 1936. By Joseph A Chucka. American Fertilizer. v. 87, no. 2. July 24, 1937. p. 11.

Placement of fertilizers is important. By J.H. Currie. Pacific Rural Press. v. 133, no. 18. May 1, 1937. p. 599.

Fertilizer Placement. (Cont'd)

Placing plant food. By H.R.Smalley. New England Homestead. v. 110, no. 10. May 8, 1937. p. 6. Proper location to meet crop need will increase returns from fertilizer.

Fertilizers.

Fertilizer experiments with cotton in type-of-farming areas. By Martin Nelson. Fayetteville, Ark., 1937. 31 p. University of Arkansas. College of agriculture. Agricultural experiment station. Bulletin no. 346.

Relation of soil and water conservation to the fertilizer industry. By Dr. T.S. Buie. Fertilizer Review. v. 12, no. 4. July-August, 1937. p. 10-11, 15.

Fire Protection.

Farmers get the jump on fire. By Loren S. Bush. Pacific Rural Press. v. 133, no. 23. June 5, 1937. p. 759. It has been estimated that over one-third of area of California, excluding deserts and National Forests, is covered by fire protection. There are more than two hundred rural fire trucks in operation. Of fifty-eight counties in state, eight are wholly protected and twenty-five others have partial protection.

Reducing farm fire hazards. By E.R. Gross. New England Homestead, v. 110, no. 15. July 17, 1937. p. 3, 12. Nearly one-third million dollars is lost by farmers for every working day.

Reducing farm fire hazards. Utah Farmer. v. 7, no. 20. May 25, 1937. p. 13.

Wet, spoiled hay is fire risk. By Jerry Sotola. Washington Farmer. v. 62, no. 14. July 8, 1937. p. 429.

Floods and Flood Control.

Engineering and design for Los Angeles flood control. By R.E. Cruse. Military Engineer. v. 29, no. 166. July-August, 1937. p. 282-287.

Flood irrigation. By Vincent E. Bergh. Montana Farmer. v. 24, no.22. July 15, 1937. p. 6.

Flood planning to continue. Engineering News-Record. v. 119, no. 10. Sept. 2, 1937. p. 405. Compact failure will not stop New England flood-control planning.

Floods and wildlife. By Ira N. Gabrielson. Scientific American. v. 156, no. 2. February, 1937. p. 100-102. Flood control and wildlife management can be correlated. Proper dam design creates wildlife refuges...A three-in-one program.

Floods and Flood Control. (Cont'd).

Floods of March 1936 in Pennsylvania, prepared in cooperation with the United States Geological Survey. Harrisburg, Pa., Department of Forests and Waters. Division of Hydrography. 1936. 129 p. Multigraphed.

Floors.

Raising calves on wire floors. By H.H. tucker. New Jersey Farms and Garden. v. 8, no. 4. April, 1937. p. 5, 49. Tells how they are used, how they work, and how to make them.

Forage Crops - Drying

Artificial drying of forage crops. By E.D. Gordon and W.M. Hurst. Washington, D.C., 1937. 24 p. U.S. Department of Agriculture. Circular no. 443.

Frost Protection.

Covina grower uses furnace heat for frost protection. By Donald Joyce Thompson. California Citrograph. v. 22, no. 7. May, 1937. p. 314, 316. Experience of 11 years with central heating plant developed and used.

Fuels.

Natural gasoline in the world motor fuel market. By D.E. Buchanan. National Petroleum News. v. 29, no. 24. June 16, 1937. p. 36-40. Growth of natural gasoline industry in this country, from its beginnings in West Virginia to present highly developed system worked out in East Texas and extending to Gulf Coast refinery, where finished polymer gasoline and stabilized natural gasoline is turned out, is described in article. Characteristics of grades of natural gasoline figuring most actively in export trade are discussed and there is also included discussion of polymorization as opening new field of activity for natural gasoline industry.

Proposed standard tractor fuels. By L.B. Sperry. Farm Implement News. v. 58, no. 17. August 26, 1937. p. 26-27. Tractor fuel specifications: 1. Fuel must be free from suspended and mechanical impurities. 2. Fuel must contain no water. 3. Fuel must be as free from gum content as the better grades of gasoline; it should be gum free. 4. Fuel must be of controlled distillation range, and end point should not be higher than 550 F. 5. Recovery on complete distillation should be above 99 percent. 6. Fuel should carry enough light fractions to ensure perfect ignition quality at moderate manifold temperatures. 7. Octane value must be so high as to prevent detonation - not lower than 40. 8. Fuel must be materially cheaper than 70 octane gasoline. 9. Fuel should be so controlled that it cannot be taxed for political exploitation. 10. Sludge characteristics should be left out of this fuel.

Fuels. (Cont'd)

Proposed standards for tractor fuels. By L.B. Sperry. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 357-358. Tractor fuel specifications: 1. Fuel must be free from suspended and mechanical impurities. 2. Fuel must contain no water. 3. Fuel must be as free from gum content as better grades of gasoline; it should be gum free. 4. Fuel must be of controlled distillation range, and end point should not be higher than 550 F. 5. Recovery on complete distillation should be above 99 percent. 6. Fuel should carry enough light fractions to ensure perfect ignition quality at moderate manifold temperatures. 7. Octane value must be so high as to prevent detonation - not lower than 40. 8. Fuel must be materially cheaper than 70 octane gasoline. 9. Fuel should be so controlled that it cannot be taxed for political exploitation. 10. Sludge characteristics should be left out of this fuel.

Refiner's view of the tractor fuel problem. By M.D. Gjerde. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 355-356.

Tractor fuels in relation to tractor operating costs. By F.W. Duffee. Farm Implement News. v. 58, no. 17. August 26, 1937. p. 23-25. Recommendations: 1. That a committee be set up to develop standards of low volatility fuel, this committee of course working with and through American Petroleum Institute. 2. Comprehensive and accurate survey be conducted to show definitely what difference is in engine wear when operating on gasoline or distillate. 3. Possibility of engine with variable compression, design of one make of Diesel which has two compression ratios; one for Diesel operation and one for Otto-cycle operation for starting suggest variable compression, making it possible to quickly change compression ratio so as to be suitable for high octane rating gasoline or low octane rating distillate.

Tractor fuels in relation to tractor operating costs. By F.W. Duffee. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 352-354. Discussion confined almost entirely to Otto-cycle type of engine. Data relative to fuel prices are tank wagon prices in Madison, Wisc., area. Not intended as a complete discussion. Conclusions for Wisconsin conditions where state tax of 4 cents on gasoline is refundable: 1. Where uniformly steady loads equalling or exceeding 60 to 70 percent of maximum horsepower of engine prevail, use light straw-colored distillate of good grade having maximum or end point of not over about 525°F. 2. Where load on engine is less than 60 or 70 percent of maximum horsepower, or where loads are irregular or vary, then we would recommend gasoline. 3. If tractor is not used large number of hours per year, and certainly if it is small tractor, we recommend using gasoline exclusively as there will be less bother in handling tractor on gasoline, and saving in using distillate would not be great. Recommendations: 1. As to recommendations for future development, I should like to suggest that committee be set up to develop standards of low volatility fuel, this committee of course working with and through American Petroleum Institute. 2. Repeats suggestions made earlier, that comprehensive and accurate survey be conducted to show definitely what difference is in engine wear when operating on gasoline or distillate.

Fuels. (Cont'd)

3. Suggests possibility of engine with variable compression, design of one make of Diesel which has two compression ratios; one for Diesel operation and one for Otto-cycle operation for starting suggests variable compression, making it possible to quickly change compression ratio so as to be suitable for high octane rating gasoline or low octane rating distillate.

Hay Drying.

Quick drying of hay. Journal of the Ministry of Agriculture. v. 44, no. 4. July, 1937. p. 311-316. Discusses hay racks.

Heating.

Automatic coal burners. By H. Vandervoort Walsh. American Architect and Architecture. v. 149, no. 2652. December, 1936. p. 85-89.

Radiation and convection across air spaces in frame construction. By Gordon B. Wilkes and Carl M.F. Peterson. Heating, Piping and Air Conditioning. v. 9, no. 8. August, 1937. p. 505-510. Purpose of paper is two-fold: first, to state again fundamental laws of radiation and convection because of apparent lack of understanding; and second, to give new experimental data in regard to rate of heat transfer across full-sized air spaces in various positions bounded by surfaces that are both good and poor reflectors of heat radiation.

Houses.

Extensible home. Federal home loan bank review. v. 3, no. 11. August, 1937. p. 367.

Federal home building service plan. Federal Home Loan Bank. Review. v. 3, no. 10. July, 1937. p. 321-322, 356. Plan involves co-operation among Federal Home Loan Banks, lending institutions, architects, and builders, with lending institution coordinating various services, and providing borrower with single point of contact with those agencies which build and finance his home.

New nation-wide program to help small home builder. Lumber & Building Material Digest. v. 6, no. 8. August, 1937. p. 1. Most comprehensive plan announced by Federal Home Loan Bank Board.

Standards for working-surface heights and other space units of the dwelling. By Maud Wilson, Evelyn H. Roberts and Ruth Thayer. Pullman, Washington, 1937. 38 p. State College of Washington. Agricultural experiment station. Bulletin no. 345.

Houses, Remodeling

Making over the old house - Some sensible reminders by S.A. Witzel. Wisconsin Agriculturist and Farmer. v. 64, no. 10. May 8, 1937. p. 3, 10.

Modernization without electricity. Montana Farmer. v. 24, no. 20. p. 6. Lighting, cooking, washing, refrigeration units operated without electric energy.

Modernization without electricity. Utah Farmer. v. 57, no. 22. June 25, 1937. p. 5.

Hydrology.

Bibliography of hydrologic information. A contribution of the Committee on Hydrology. Saint Joseph, Mich., American Society of Agricultural Engineers, 1937. 6 p. Mimeographed.

Bibliography on soil and water conservation and hydrology. A contribution of the Subcommittee on Bibliography and Review of Reports of the Committee on Soil Erosion American Society of Agricultural Engineers. Saint Joseph, Mich., 1937. 23 p. Mimeographed.

Insect Control.

Air raid on pests. By J.H. Currie. Farm Journal. v. 61, no. 7. July, 1937. p. 18.

Bibliography on the use of airplanes in insect control from 1922 to 1933. Compiled by Walker E. McBath. Washington, D.C., U.S. Department of Agriculture. Bureau of Entomology. 37 p. Mimeographed.

Efficient poison-bran mixer to meet invading grasshoppers. Extension service review. v. 8,no. 7. July, 1937. p. 101-102.

Insulation.

Insulation under high humidity conditions. By A.D. Edgar. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 359, 361. Study of use of insulation under high storage humidities is outgrowth of storage investigation. Summing up principal points to consider in insulating northern potato storages: 1. Temperature and humidity control necessary for reduced potato losses are best secured in well-designed and adequately insulated storage. 2. Correctly installed fill type insulation meets structural,economic, and insulation requirements.

New insulating material. Electrical Review. v. 121, no. 3114. July 30, 1937. p. 147-148. Electrical properties of "Rubbons."

Saved - By insulation. Domestic Engineering. v. 150, no. 1. July, 1937. p. 56-57. Shows the practical application of research to common problem.

Insulation. (Cont'd)

Use of insulation under high humidity conditions. By A.D. Edgar. Refrigerating Engineering. v. 34, no. 3. September, 1937. p. 162, 180.

Irrigation.

Desert menace in the San Joaquin. Engineering News-Record. v. 119, no. 8. August 19, 1937. p. 299-303. Because much of the valley that is California's garden spot is reverting to desert, the boldest and most picturesque water project of modern irrigation history is being undertaken. Article, prepared from authoritative data, outlines menacing conditions which project is designed to correct, as well as many complex factors involved in work.

Irrigation of deciduous orchards. By A.H. Hendrickson. Pacific Rural Press. v. 133, no. 18. May 1, 1937. p. 600.

Proper irrigation needed for high quality fruit. By J.H. Currie. Pacific Rural Press. v. 134, no. 1. July 3, 1937. p. 12.

Sprinkler will give low-cost irrigation. Washington Farmer. v. 62, no. 16. August 5, 1937. p. 6.

Water spreading at San Angelo. By R.M. Milhollin and Harold G. Anthony. Soil Conservation. v. 3, no. 2. August, 1937. p. 35-37.

Irrigation Water.

Pure ammonia in irrigation. American Fertilizer. v. 87, no. 3. August 7, 1937. p. 10-11. Shell Chemical Company, a California Corporation, has devoted considerable study to application of ammonia to California agriculture and has achieved substantial success. Experimental work was begun in 1931, and by 1934 it was known that ammonia dissolved in irrigation water was a very efficient method for application of nitrogen. Mechanical problems of metering and distribution were by this time also successfully solved, and practice was made commercial during winter of 1934-35. By 1936 approximately 25 percent of all nitrogen applied to soils of California came from anhydrous ammonia delivered to consumer in 150-lb. cylinders.

South coastal basin investigation. Detailed analyses showing quality of irrigation waters. Sacramento, Calif., 1933. 130 p. California. Department of Public Works. Division of Water Resources. Bulletin no. 40-A. Supplemental to bulletin no. 40.

Suitability of Colorado river water for citrus in South Coastal Basin. California Citrograph. v. 22, no. 6. April, 1937. p. 235, 272-273.

Lighting.

Better light available for the farm. By L.C. Porter. Agricultural Engineering. v. 18, no. 8. August, 1937. p. 351.

Lightning.

Lightning protection as an extension project. By John R. Haswell. Agricultural Engineering. v. 18, no. 8. August, 1937, p. 360-361.

Lubrication.

Lubricants and false brinelling of ball and roller bearings. By J.O. Almen. v. 50, no. 6. June, 1937. p. 415-422.

Meters.

Measurement of precipitation; Instructions for the measurement and registration of precipitation by means of the standard instruments of the United States Weather Bureau. 4th edition, revised. By Benjamin C. Kadel. Washington, U.S. Govt. print. off., 1936. 25 p. U.S. Department of Agriculture. Weather Bureau. Circular E, Instrument division. W.B. no. 771.

Performance characteristics of a water current meter in water and in air. By Galen B. Schubauer and Martin A. Mason. Washington, U.S. Govt. print. off., 1937. 351-360 p. U.S. Department of Commerce. National Bureau of Standards. Research paper RP981. Effect of density on performance of water current meter of cup-wheel type, known as small Price meter, was investigated by calibrating meter first in water by towing it in rating tank, and second in air by placing meter in wind tunnel. Change from water to air produced change in density by factor of approximately 800. It was found that revolutions of cup wheel during 1 foot of travel of fluid was function of product of velocity by square root of density and that Reynolds number and turbulence have no measurable effect. It was concluded that changes of density occurring in field use can cause no appreciable error.

Milk Cooling.

Milk cooling. By J.H. Ehlers. Utah Farmer. v. 58, no. 1. July 15, 1937. p. 22.

These cooling tanks hold milk and cream quality to high mark. Kansas Farmer. v. 74, no. 39. June 19, 1937. p. 10.

Milk Houses.

Mr. Hale builds a milk house. By W.C. Harrington. American Agriculturist. v. 134, no. 13. June 19, 1937. p. 417. Gives plan of two room wholesale milk house.

Modernizing the milk room. Cooperative planning by the farmer with his public utility will save time and labor in daily chores. By Joseph H. Bodwell. New England Homestead. v. 110, no. 7. March 27, 1937. p. 3, 19.

Miscellaneous.

Century's great inventions. By D.S. Kimball. Mechanical Engineering. v. 59, no. 7. July, 1937. p. 507-510. Inventions classified according to fields of useful progress.

Engineer and his relation to government. By Dr. Vannevar Bush. Science. n.s. v. 86, no.2222. July 30, 1937. p. 87-91.

Index to the proceedings of the American society of municipal engineers and International association of public works officials 1918-1936. Chicago, American public works association (c. 1937) 70 p.

Proceedings. Association of land-grant colleges and universities. Fiftieth annual convention. Houston, Texas. 1936. 376 p.

Proceedings of the Thirteenth annual convention of the National fertilizer association held at White Sulphur Springs, W . Va., June 7, 8 and 9, 1937. Washington, D.C., the Association, 1937. 114 p.

Technological trends and national policy. Science. n.s.v. 86, no. 2221. July 23, 1937. p. 69-71. Findings: (1). Large number of inventions made every year shows no tendency to diminish. (2) Although technological unemployment is one of most tragic effects of sudden adoption of many new inventions, inventions create jobs as well as take them away. (3) No satisfactory measures of volume of technological unemployment have as yet been developed but at least part of price for this constant changein employment requirements of industry is paid by labor since many of the new machines and techniques result in "occupational obsolescence." (4) Question whether there will be large amount of unemployment during next period of business prosperity rests only in part on introduction of new inventions and more efficient industrial techniques. (5) Aside from jobs, subtracted or added, new inventions affect all great social institutions. (6) Large and increasing part of industrial development and of correlated technological advances arises out of science and research. (7) Advance of many aspects of industry and correlated technologies is dependent upon scientific research and discovery. (8) Though influence of invention may be so great as to be immeasurable, there is usually opportunity to anticipate its impact upon society since it never comes instantantcously without signals. (9) While serious obstacle to considering invention in planning is lack of precise knowledge, this not irremediable nor most difficult fact to over come. (10) Among resistances to adoption of new invention and hence to spread of advantages of technological progress there is specially noted these resistances arising in connection with scrapping equipment in order to install new. (11) Time lag between first development and full use of invention is often period of grave social and economic maladjustment. Recommendations: (1) Reports herewith presented reveal imminence of few very important inventions that may be seen widely used with resultant social influences of significance. Since these inventions may deeply affect planning it is recommended that series of studies be undertaken by planning agencies herein recom-

Miscellaneous. (Cont'd)

mended or by existing planning boards, with aid of such natural and social scientists as may be needed, on following inventions: mechanical cotton picker, air conditioning equipment, plastics, photo-electric cell, artificial cotton and woolen-like fibers made from cellulose, synthetic rubber, prefabricated houses, television, facsimile transmission, automobile trailer, gasoline produced from coal, steep-flight aircraft planes and tray agriculture. (2) Special case of influence of invention is technological unemployment. It is recommended that joint committee be formed from Department of Labor, Dept. of Commerce, Dept. of Agriculture, Bureau of Mines, Interstate Commerce Commission, Social Security Board and Works Progress Administration with such other cooperation as may be needed, for purposes of keeping abreast with technological developments and ascertaining and noting occupations and industries which are likely to be affected by imminent technological changes and extent to which these inventions are likely to result in unemployment. It is recommended that such information be made available thru appropriate departments to industry and labor likely to be affected. (3) In view of findings regarding importance of technology and applied science, it is recommended that Federal government develop appropriate agencies for continuous study of them; and more specifically that there be set up in respective departments science committees with definite function of investigating and reporting at regular periods on progress and trends of science and invention and possible and economic effects flowing therefrom as they affect work of departments and of agencies to whom they render service. (4) Since patent laws have considerable influence on rate of technological progress, it is recommended that whole system be reviewed by group of social scientists and economists. (5) It is recommended that Science Committee of National Resources Committee, with cooperation of other scientists that may be needed, make investigation of adequacy of reporting of inventions and of discoveries in applied science and advise on feasibility (a) of more balanced coverage, (b) of selecting those more socially significant and (c) of assembling of such data in some central location or locations. (6) Most important general conclusion to be drawn from these studies is continuing growth of already high and rapidly developing technology in social structure of nation, and hence hazard of any planning that does not take this fact into consideration.

Transactions of the American Society of Agricultural Engineers, 1934-1935. Saint Joseph, Michigan, American Society of Agricultural Engineers. n.d. 2 volumes in 1.

Motor Trucks - Costs.

Farm hauling costs. By Grif McKay. Farm Journal. v. 61, no. 8. August, 1937. p. 17, 22.

Nozzles.

Research on flow nozzles. By Howard S. Bean. Mechanical Engineering. v. 59, no. 7. July, 1937. p. 500-502. Record of progress in the work of the A.S.M.E. special research committee on fluid meters.

Orchard Heaters.

Interesting figures on orchard heating given citrus growers. California Citrograph. v. 22, no. 6. April, 1937. p. 254, 256, 258-259.

Paints and Painting.

Economy of paint. S.A. Witzel. Wisconsin Agriculturist and Farmer. v. 64, no. 13. June 19, 1937. p. 3.

Hints on getting a good paint job. Ohio Farmer. v. 179, no. 13. June 19, 1937. p. 432.

Mix imagination with farmstead painting. By R.B. Hull. Hoosier Farmer. v. 22, no. 7. July, 1937. p. 13, 26.

Paint really raises the standard of home life. Oregon Farmer. v. 60, no. 13. June 24, 1937. p. 20. It not only preserves property, but saves time and labor.

Pipes, and Piping.

Century-old cast-iron found in good condition. Popular Mechanics. v. 67, no. 2. February, 1937. p. 184.

Plows and Plowing.

Good plows do better work. Utah Farmer. v. 58, no. 1. July 15, 1937. p. 12.

Good plows work better than old ones. Wisconsin Agriculturist and Farmer. v. 64, no. 14. July 3, 1937. p. 7.

New plough for the laying of irrigation and drainage pipes. By H.J. Hopfen. International Institute of Agriculture. Monthly Bulletin of Agricultural Science and Practice. v. 28, no. 8. August, 1937. P.314T - 315T. Machine is operated on principle of mole plough, and in same way hollows out subterranean ditch in soil which serves as mould or piping. Machine itself, consists mainly of caterpillar tractor, concrete mixer placed on tractor and apparatus for moulding and laying of pipes.

Ox plow to gang plow; a centenary editorial. By Samuel R. Guard. Breeder's Gazette. v. 102, no. 8. August, 1937. p. 9, 15, 19.

Plumbing.

Report on hydraulics and pneumatics of plumbing drainage systems - I. By F.M. Dawson and A.A. Kalinske. Iowa City, Iowa, 1937. 28 p. University of Iowa studies. Studies in Engineering. Bulletin 10. Purpose of these studies is to establish definite minimum drain, stack, and vent sizes for various plumbing installations, and to analyze various parts of plumbing drainage system so that they can be designed on sound rational basis.

Plywood.

American Douglas fir plywood and its uses. Prepared by Forest products division. Washington, U.S. Govt. print. off., 1937. 41 p. U.S. Department of Commerce. Bureau of foreign and domestic commerce. Trade promotion series no. 167.

Potato Storage.

An improved trackside storage for potatoes. By Alfred D. Edgar. Orono, Me., 1937. 16 p. University of Maine. College of Agriculture. Extension service. Bulletin no. 237.

An improved type of farm potato storage. By Alfred D. Edgar. Orono, Me., 1937. 15 p. University of Maine. College of Agriculture. Extension service. Bulletin no. 238.

Poultry Houses and Equipment.

Brooder house hints. Wisconsin Agriculturist and Farmer. v. 64, no.9. April 24, 1937. p. 20. Table gives relation of size of house to chick capacity.

How many layers? Hoard's Dairyman. v. 82, no. 11. June 10, 1937. p. 359. Gives bill of materials for constructing a 26 x 30 house.

New Jersey two-story poultry house and bill of materials. By E.R. Gross. New Brunswick, N.J., 1937. 24 p. New Jersey agricultural experiment station. Bulletin 631.

Pumps and Pumping.

Irrigation pumping plant. Electrical Times. v. 92, no. 2388. July 29, 1937. p. 137.

Water. Montana Farmer. v. 24, no. 20. June 15, 1937. p. 5, 17. Pumps available for every farm use. Pressure systems no longer a luxury.

Pump testing laboratory. California Cultivator. v. 84, no. 15. July 17, 1937. p. 525. Department of Mechanical Engineering at University of California has established laboratory for study vertical-shaft pumps. Program of research has been worked out in co-operation with Division of Agricultural Engineering and Division of Irrigation Investigations and Practice of College of Agriculture and with pump manufacturers. Work of this laboratory will include: Research in field of deep-well and propeller pumps. Analysis of laboratory and field methods of testing, development of testing standards and calibration of testing instruments. Tests of motors, bearings and auxiliary equipment. Tests of manufacturers' types. Acceptance tests of specific pumps.

Reclamation.

Bills introduced in the first session of the Seventy-fifth Congress of interest to the Bureau of Reclamation. v. 27, no. 8. August, 1937. p. 175-179.

Central Valley project. California. Reclamation Era. v. 27, no. 7. July, 1937. p. 156-159.

Program and objectives of the Reclamation Bureau. By B.E. Stoutemyer. Reclamation Era. v. 27, no. 8. August, 1937. p. 169-171.

Refrigerants.

Methyl chloride shown to be a practical refrigerant when measured by the accepted theoretical standard. By E.W. McGovern. Agricultural News Letter. v. 5, no. 8. August, 1937. p. 139-140. Refrigeration in its relation to agricultural products in storage is of such present importance that there is recognized need for better knowledge of kinds of refrigerants available and types of machines and systems for which the various refrigerants are adapted. Discusses properties desired in theoretical ideal refrigerant and considers how various commonly used refrigerants measure up to them.

Refrigeration.

Farm refrigeration equipment that "earns its keep". By Mack Tucker. Refrigerating Engineering. v. 34, no. 2. August, 1937. p. 77-82, 126. Refrigerating engineers are paying more attention than formerly to refrigeration needs of farmer, and possibilities of farm market are rapidly growing. Domestic farm refrigerator, small milk cooler, home refrigerators with compartments for marketable produce, farmers' cold storages used by entire community - all these deserve special attention.

Refrigeration of apples. By Edwin Smith. Refrigerating Engineering. v. 34, no. 7. Sept. 1937. p. 153-156. Practice regarding temperatures and atmospheres of storage.

Use of refrigeration on farms. By Truman E. Hienton. Refrigerating Engineering. v. 34, no. 2. August, 1937. p. 75-76, 92, 130, 132.

Refrigerator Lockers.

Community ice boxes. By S.R. Winters. Southern Agriculturist. v. 67, no. 5. May, 1937. p. 8.

Refrigerators.

Test code for mechanically operated household refrigerators. Refrigerating Engineering. v. 34, no. 7. September, 1937. p. 157-159, 169. New code published by Technical Committee of N.E.M.A. covers performance of domestic units.

Research.

History of agricultural experimentation and research in the United States 1607-1925, including a history of the United States Department of Agriculture. By Alfred Charles True. Washington, U.S. Govt. print. off., 1937. 321 p. U.S. Department of Agriculture. By Alfred Charles True. Washington, U.S. Govt. print. off., 1937. 321 p. U.S. Department of Agriculture. Miscellaneous publication no. 251.

Processing research for agriculture. By John P. Ferris. Mechanical Engineering. v. 50, no. 6. June, 1937. p. 431-433.

Rivers.

What will the rivers do now? By Dr. Frank Thone. Science News Letter. v. 31, no. 844. June 12, 1937. p. 378-380. New great dams are clearing their muddy waters and clear water cuts more; what will be effect on beds?

Sewage and Sewage Disposal.

Private water supplies and private sewage disposal systems in Wisconsin. Madison, Wis., State board of Health. Bureau of Plumbing and Domestic sanitary engineering, 1935. 316 p.

Residential sewage disposal plants; How to build and maintain them. Seattle, Wash., 1936. 4 p. State department of Health. Division of Public health engineering. P.H.E. no. 1.

Sewage disposal for residences or smaller installations (Tourists' camps, Rural schools, etc.). Helena, Mont., 1937. 7 p. Montana State board of health. Division of water and sewage. Circular no. 5.

Silage.

Making stack silage. By R.E. Hodgson, J.C. Knott, and O.J. Hill. Pullman, Wash., 1937. 7 p. State College of Washington, Extension Service. Extension bulletin 235.

Silo Filling.

Fill a silo ... two silos. By Carlyle Hodgkin. Nebraska Farmer. v. 79, no. 17. August 28, 1937. p. 3, 16. Essential reasons may be summarized thus: Fill a silo - 1. To assure a winter's feed supply. 2. To assure a future feed supply. 3. To help sustain the price of corn. 4. To give your pasture a much needed rest.

Filled silos increase profits. Implement and Tractor. v. 52, no. 15. July 24, 1937. p. 17.

Silos.

Silo increases feeding profits. Research department. Farm equipment institute. Farm Machinery and Equipment. no. 1843. July 15, 1937.

Silos. (Cont'd)

p. 5-6. Silo filling with modern equipment should be popular and profitable this year.

Slat fence silos. Missouri Farmer. v. 29, no. 16. August 16, 1937. p. 4. Silage kept as well for short storage periods in slat or snow fence silos, lined with special silo paper, as in upright or pit silo, in tests at National Agricultural Research Center, Beltsville, Md. Snow fence silos are inexpensive, can be erected quickly, moved from one spot to another each year, and will last several seasons if fence is rolled and stored each year as silo is emptied. Tests, conducted by Bureau of Dairy Industry, show importance of lining snow fence silos with tough silo paper, resembling ordinary building paper.

Silt.

Sand rivers of China. By W.C. Lowdermilk. Soil Conservation. v. 3, no. 1. July, 1937. p. 1-4, 26-27.

Soil Corrosion.

Soil-corrosion studies, 1934. Field tests of nonbituminous coatings for underground use. By Kirk H. Logan and Scott P. Ewing. Washington, U.S. Govt. print. off., 1937. 361-388 p. U.S. Department of Commerce. National Bureau of Standards. Research paper RP982. National Bureau of Standards has conducted series of tests of metallic and other non-bituminous coatings to determine their suitability for protection of structures exposed to corrosive soils. Tests of calorized pipe in few soils indicate that this type of coating affords only partial protection. Lead corrodes sufficiently in many soils to render thin lead coating unsatisfactory. Of metallic coatings tested, zinc was the best. However, zinc coatings gradually deteriorate in many soils.

Several new coatings have been under observation for 2 years. For this period of exposure, best of these were a vitreous enamel and two rather thick rubber compounds.

Soil Moisture.

Some moisture relations of the soils from the erosion experiment stations. By L.B. Olmstead. Washington, D.C., 1937. 44 p. U.S. Department of Agriculture. Technical bulletin no. 562.

Solar Heaters.

When the sun shines - how to use it. Domestic Engineering. v. 150, no. 2. August, 1937. p. 74-76. Article tells how solar water heaters can be installed using the radiant heat of the sun, with or without other heat.

Strains and Stresses.

Stress-optically less sensitive materials in photoelasticity. By A.G. Solakian. Mechanical Engineering. v. 50, no. 6. June, 1937. p. 423-424.

Thermocouples.

Reliability of common types of thermocouples. By D. Quiggle, C.O. Tongberg and M.R. Fenske. Industrial & Engineering Chemistry. Industrial edition. v. 29, no. 7. July, 1937. p. 827-829. Results obtained seem to indicate that for temperature range, for size of wires, and for conditions under which tests were made: (1). Heat treatment of copper-copel, copper-constantan, and chromel-alumel thermocouples above about 200°C. causes them to indicate temperatures which are different from those before heat treatment, discrepancy, in general, being greater the higher the temperature of heat treatment; moreover, measurements of lower temperatures show, in general, less discrepancy than measurements of lower temperatures show, in general, less discrepancy than measurements of higher temperatures. (2). Heat treatment of copper-copel and copper-constantan thermocouples at temperature than before such heat treatment; heat treatment above 300-350°C. causes them to indicate lower temperature. It may be concluded that copper-copel and copper-constantan thermocouples possess rather high degree of reliability if used in temperature range 0° to 200° C.

Tractors.

Agricultural requirements of the small type all-purpose tractor from the implement engineers viewpoint. By J.R. Orelind. Northwest Farm Equipment Journal. v. 51, no. 8. August, 1937. p. 43-44. Cultivator attachments. Clearance. Tread. Length. Weight. Wheels. Quick mounting. Price.

Tractor and implement tire handbook. Akron, Ohio, B.F. Goodrich company, n.d. 44 p.

Valuation.

Engineering valuation. By Anson Marston and Thomas R. Agg. New York, McGraw-Hill book company, Inc., 1936. 655 p.

Walls.

Compressive strength of structural tile masonry. By Douglas E. Parsons and David Watstein. Washington, U.S. Govt. prin. off., 1937. 215-226 p. U.S. Department of Commerce. National Bureau of Standards. Research paper RP972. In cooperation with Housing Division of Federal Emergency Administration of Public Works, 6 walls and 30 wallettes were tested. Object was to determine how differences in tile design or kind of mortar affected compressive strength of masonry walls in combination of brick-facing and end-construction tile under eccentric loads. Walls were of structural clay tile with facing of brick, alike in all respects except design of tile. Different mortars as well as tiles of different designs were used in constructing wallettes. All masonry specimens were tested at age of 2 months. As loads were applied on walls during compressive tests, rate of deformation increased with increasing loads, because of yielding of mortar. Mortar, composed of mixture of one part cement, one part lime, and six parts of sand, by volume, crushed in bed joints for tile. Crushing of mortar in bed joints was first sign of impending failure of wallets, except for those built with mortars rich in portland cement.